

PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (<http://bmjopen.bmj.com/site/about/resources/checklist.pdf>) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Short-term functions and long-term consequences of checking behavior as a transdiagnostic phenomenon: Protocol for a systematic review
AUTHORS	Vivell, Maj-Britt; Opladen, Vanessa; Vocks, Silja; Hartmann, Andrea

VERSION 1 – REVIEW

REVIEWER	D. Catherine Walker Union College, Psychology
REVIEW RETURNED	05-Oct-2021

GENERAL COMMENTS	<p>Short-term functions and long-term consequences of checking behavior as a transdiagnostic phenomenon: Protocol for a systematic review Manuscript ID bmjopen-2021-056732</p> <p>The authors present a protocol for conducting a systematic review to determine the emotional contexts under which individuals are most likely to engage in checking behavior (CB) across a range of psychological diagnoses, and the immediate and delayed consequences of that CB. The review will include both clinical and non-clinical analogue samples and will assess cognitive and emotional outcomes.</p> <p>The consequences of CBs are not well-understood, though cognitive behavioral theory postulates that CB's act as a safety behavior. A systematic review is an important step to hopefully generate more research using experimental, longitudinal, and ecological momentary assessment methodology to better answer this question. Better understanding of the causes, consequences, and functions of CBs may inform treatment, especially if the CB do not fulfill a safety behavior role, as hypothesized by cognitive behavioral theories.</p> <p>For the purposes of the review, I will use the line numbers that are on the right, as there is one line number per line of text for those line numbers.</p> <p>Abstract p. 4, line 31: Maybe clarify what is meant by the "valence of situations in which CB occurs"? The meaning of this phrase was not fully clear.</p> <p>Introduction p. 6, lines 74-75: Avoidance and CB are not the only safety behavior. What about compulsions? Not all compulsions fit neatly into a description of CB. What about having benzodiazepine pills on one's person at all times just in case one has a panic attack? What</p>
-------------------------	--

	<p>about bringing a safety person on trips that make one anxious that one would otherwise avoid?</p> <p>p. 6, lines 87-89: I would include an explanation of how CB's are both negatively reinforced but also produces negative emotions, as the authors of this paper posit. Also I would use the term unpleasant or unwanted emotions, rather than negative emotions, since emotions inherently are not negative, and can serve useful functions.</p> <p>p. 7, line 102: I would not describe CB in eating disorders as actually controlling one's body, but perhaps as providing those with eating disorders with the perception of control.</p> <p>p. 7, line 109: "This does not apply to BED, ..." Explain what "this" means.</p> <p>P. 7, line 118: I have the same comment regarding BDD, in that CB serve a function of providing the person with BDD with the perception of control, rather than providing the person with BDD actual control over their perceived defect.</p> <p>p. 8, lines 145-147: I would give an example of how treatment might differ if CB serves a different function than as a safety behavior.</p> <p>METHODS</p> <p>Are the authors planning to include unpublished dissertations? If not, why not? The authors may lose pertinent information from well-designed studies by leaving out dissertations.</p> <p>p. 10, lines 187-188: "Only a limit to human studies will be set." The wording here is confusing. Do the authors mean that the only exclusion criterion is that the study must involve human participants (i.e., as opposed to rats/mice or systematic reviews)?</p> <p>p. 10, lines 179-189. I would add any cited studies in the articles that you are including in your review (that were not already found/included in the original search process) as an additional part of your search process.</p> <p>Data Extraction Form</p> <p>For data extraction form how will you label analogue studies? There are only check boxes for the specific psychological diagnoses.</p>
REVIEWER	Katy Sivyer University of Southampton School of Psychology, Psychology
REVIEW RETURNED	27-Oct-2021
GENERAL COMMENTS	<p>Please find my comments on the paper in the attached document. The majority of the review checklist points I have responded to as 'no' are due to a lack of clarity in terms of the rationale for the systematic review, which impacts on the research question/study objective, abstract, introduction, and outcomes that will be examined in the review. I have raised a query regarding the references as a few are citing book chapters rather than journal articles. These issues are discussed in more detail in the attached document.</p> <p>BMJ Open Review</p>

	<p>RE: Short-term functions and long-term consequences of checking behavior as a transdiagnostic phenomenon: Protocol for a systematic review (bmjopen-2021-056732)</p> <p>Recommendation: Major revision/reject</p> <p>This paper consists of a protocol for a narrative review examining checking behaviour across a range of psychological disorders as a potential transdiagnostic process that may maintain and exacerbate distress.</p> <p>The concept of the review is interesting in terms of taking a transdiagnostic perspective of this behaviour and its manifestations across different disorders; however, the rationale for the review needs to be strengthened. Currently the introduction provides a factual overview of several psychological disorders that checking behaviours can be observed in. However, the novel aspects of the review need to be emphasised and better explained.</p> <p>The introduction could also be better synthesised as it reads a bit like a list of disorders and their checking behaviours. Towards the end it becomes a bit repetitive in terms of what the checking behaviours are and their impact on the disorders, which is similar (reinforcing the behaviours and exacerbating concerns). This is not a novel concept as the self-perpetuating nature of cognitions and behaviours are common to several cognitive behavioural models of specific psychological disorders – theoretically, at least.</p> <p>The objectives better highlight some of the more novel ‘mechanistic’ questions the review seemingly hopes to answer (e.g. assessing emotional states triggering checking behaviours, and clarifying short-term and long-term impacts of checking behaviours). However, how this addresses gaps in the literature and why these aspects need to be examined is not raised in the introduction, and I would be looking for this to be highlighted in the introduction so that it is more obvious why this review is needed and why it would be helpful. Currently it is not clear what this review will add to some of the already existing reviews that have examined checking behaviour in specific disorders.</p> <p>More generally, there are a number of sentences and terms that need clarifying. I have outlined below where further clarifications are needed and highlighted where I feel rationale could be strengthened. The majority of the review checklist points I have responded to as ‘no’ are due to the lack of clarity in terms of the rationale for the systematic review, which impacts on the research question/study objective, abstract, introduction, and outcomes that will be examined in the review. I have also raised a query regarding the references as a few are citing book chapters rather than journal articles outlining disorder specific models or treatment manuals.</p> <p>Specific points</p> <ul style="list-style-type: none"> • Abstract – introduction – a bit more information regarding why this review is needed/gaps in the literature would be helpful here. • Abstract – page 4 – line 31 – please clarify what you mean by ‘investigating the valence of situations in which CB occurs’ • Abstract – general comment – later in the article it seems you are planning to look at 5 groups of disorders – it would be good to highlight what disorders you are planning to look at in the abstract (introduction or method – at the moment you give examples ‘such as’ but it is not clear if your review will focus on all these disorders). • Introduction – page 6 – line 78 - please clarify this sentence: ‘as controlling the absence of potential sources of danger in one’s surroundings (e.g., stoves, windows or doors)’. It is not clear how one controls the absence of danger, or how a window is a source of danger
--	--

	<ul style="list-style-type: none"> • Introduction – page 6 – line 81 – please clarify whether this is relates to the DSM-5 criteria for OCD • Introduction – page 6 – line 88 – in general this is a good explanation of how safety checking may be unhelpful, however I wonder if 'negative reinforcement' may need a bit more explanation given the broader readership of BMJ Open (who may not have a psychology background) • Introduction – page 7 – lines 102-105 – could this sentence be clarified. Checking behaviours such as body measurement and frequent weighing are not the same as actually controlling one's weight, they equate to monitoring body shape and weight. • Introduction – page 7 – line 110 – consider rephrasing this sentence - from a cognitive behavioural perspective 'over-evaluation of shape and weight' is the underlying cognitive component of eating disorder psychopathology and constitutes a maladaptive system of self-worth, whereby shape and weight are overly important in how one judge's oneself as a person. Body checking can be the result of this over-evaluation (if its important to you, you are likely to monitor it), rather than it being a component of over-evaluation. • Introduction – page 7 – line 116 – please specify what theories (presumably cognitive behavioural?) • Introduction – general point – I am not clear why it is relevant whether checking behaviour is included in a DSM-5 diagnostic criteria for different disorders is relevant here? Is it being argued that checking behaviour should be a diagnostic criterion, or is this more an issue regarding theoretical conceptualisations of disorders and their maintenance? • Introduction – general point – whilst it is helpful to give an overview of the different disorders that checking behaviours are relevant to, what these different behaviours might entail and how they are relevant to the disorder, the introduction could be strengthened by synthesising some of the key points – as the key points are similar, particularly the sections on eating disorders and body dysmorphia in terms of the types of checking behaviours, and the consistent message throughout regarding the temporary alleviation of anxiety these behaviours result in. • Introduction – general point – citations/references – a number of the references used are book chapters and treatment manuals. In line with earlier comments it might strengthen the introduction to highlight where theory is directly linked to treatment models/approaches • Objectives – page 8 – line 140 – could you give some examples of mechanisms of action here? Checking behaviour in itself could be construed as a mechanism, so it would be helpful to understand what might underly this • Objectives – page 8 – line 143 – what are the aforementioned models? • Objectives – page 8 – line 144 - can you clarify what ritual prevention is • Objectives – page 8 – line 145 – can you clarify what models you mean here • Objectives – page 8 – lines 150-153 – the introduction could be better linked to the objectives – for example, for objective 1, there is limited discussion of emotional states in the introduction, objective 2a and 2b are very broad and it would help to give examples based on what you have discussed in the introduction. This is clearer in the abstract. • Methods – eligibility criteria – general point - perhaps rename this to 'Inclusion and exclusion criteria' • Methods – eligibility criteria – general point – this section
--	--

	<p>could be more concise – would a table be useful here?</p> <ul style="list-style-type: none"> • Methods – eligibility criteria – line 161 – please clarify what you mean by ‘there might be the need to delimit CB from exposure’ and explain why you would need to exclude based on this • Methods – data synthesis – line 212 – it is highlighted here that there will be 5 groups of studies. Is this based on disorder? It could be clearer throughout the introduction, objectives and method that 5 particular disorders will be focused on in this review.
--	---

VERSION 1 – AUTHOR RESPONSE

Reviewer #1

The authors present a protocol for conducting a systematic review to determine the emotional contexts under which individuals are most likely to engage in checking behavior (CB) across a range of psychological diagnoses, and the immediate and delayed consequences of that CB. The review will include both clinical and non-clinical analogue samples and will assess cognitive and emotional outcomes.

The consequences of CBs are not well-understood, though cognitive behavioral theory postulates that CB's act as a safety behavior. A systematic review is an important step to hopefully generate more research using experimental, longitudinal, and ecological momentary assessment methodology to better answer this question. Better understanding of the causes, consequences, and functions of CBs may inform treatment, especially if the CB do not fulfill a safety behavior role, as hypothesized by cognitive behavioral theories.

Answer: Dear Reviewer #1, thank you very much for your comments on our manuscript. We believe that our paper has benefited greatly from your suggestions and we hope that the changes made meet your expectations. The respective changes are highlighted in yellow in our revised manuscript so that you can retrace our adjustments. However, we would like to address some of your comments in more detail at this point.

Abstract

p. 4, line 31: Maybe clarify what is meant by the “valence of situations in which CB occurs”? The meaning of this phrase was not fully clear.

Answer: see p. 2 line 35

Introduction

p. 6, lines 74-75: Avoidance and CB are not the only safety behavior. What about compulsions? Not all compulsions fit neatly into a description of CB. What about having benzodiazepine pills on one's person at all times just in case one has a panic attack? What about bringing a safety person on trips that make one anxious that one would otherwise avoid?

Answer: Thank you for the comment, we have revised the description see p. 4 lines 75-77

p. 6, lines 87-89: I would include an explanation of how CB's are both negatively reinforced but also produces negative emotions, as the authors of this paper posit. Also I would use the term unpleasant or unwanted emotions, rather than negative emotions, since emotions inherently are not negative, and can serve useful functions.

Answer: Thank you for the comment. We thoroughly revised the description of the theory also due to the comments of Reviewer 2 and hope that this point is now clearer (p. 5 lines 102-122).

Furthermore we have changed the wording "negative emotions" in the appropriate places.

p. 7, line 102: I would not describe CB in eating disorders as actually controlling one's body, but perhaps as providing those with eating disorders with the perception of control.

P. 7, line 118: I have the same comment regarding BDD, in that CB serve a function of providing the person with BDD with the perception of control, rather than providing the person with BDD actual control over their perceived defect.

Answer: Thank you for this helpful comment, this seems to be a problem in the language meaning between German and English. We have changed the descriptions and used the word "inspecting" instead (p. 4 lines 89-90; 92-93)

p. 7, line 109: "This does not apply to BED, ..." Explain what "this" means.

Answer: The section was deleted due to major revisions.

p. 8, lines 145-147: I would give an example of how treatment might differ if CB serves a different function than as a safety behavior.

Answer: Thank you, we have described this on p. 6 lines 136-139 in more detail.

METHODS

Are the authors planning to include unpublished dissertations? If not, why not? The authors may lose pertinent information from well-designed studies by leaving out dissertations.

Answer: Yes, this is planned and highlighted in Table 1, p. 6 line 153

p. 10, lines 187-188: "Only a limit to human studies will be set." The wording here is confusing. Do the authors mean that the only exclusion criterion is that the study must involve human participants (i.e., as opposed to rats/mice or systematic reviews)?

Answer: see p. 8 lines 170-171

p. 10, lines 179-189. I would add any cited studies in the articles that you are including in your review (that were not already found/included in the original search process) as an additional part of your search process.

Answer: Thank you for the comment. This is planned and also provided accordingly in the PRISMA flow diagram. In order to make this clearer for the readers, we have added it to the corresponding text position (p. 7, lines 158-160).

Data Extraction Form

For data extraction form how will you label analogue studies? There are only check boxes for the specific psychological diagnoses.

Answer: We have added the appropriate boxes on data extraction form (see Additional file 4)

Reviewer #2

This paper consists of a protocol for a narrative review examining checking behaviour across a range of psychological disorders as a potential transdiagnostic process that may maintain and exacerbate distress.

The concept of the review is interesting in terms of taking a transdiagnostic perspective of this behaviour and its manifestations across different disorders; however, the rationale for the review needs to be strengthened. Currently the introduction provides a factual overview of several psychological disorders that checking behaviours can be observed in. However, the novel aspects of the review need to be emphasised and better explained. The introduction could also be better synthesised as it reads a bit like a list of disorders and their checking behaviours. Towards the end it becomes a bit repetitive in terms of what the checking behaviours are and their impact on the disorders, which is similar (reinforcing the behaviours and exacerbating concerns). This is not a novel concept as the self-perpetuating nature of cognitions and behaviours are common to several cognitive behavioural models of specific psychological disorders – theoretically, at least.

The objectives better highlight some of the more novel 'mechanistic' questions the review seemingly

hopes to answer (e.g. assessing emotional states triggering checking behaviours, and clarifying shortterm and long-term impacts of checking behaviours). However, how this addresses gaps in the literature and why these aspects need to be examined is not raised in the introduction, and I would be looking for this to be highlighted in the introduction so that it is more obvious why this review is needed and why it would be helpful. Currently it is not clear what this review will add to some of the already existing reviews that have examined checking behaviour in specific disorders. More generally, there are a number of sentences and terms that need clarifying. I have outlined below where further clarifications are needed and highlighted where I feel rationale could be strengthened. The majority of the review checklist points I have responded to as 'no' are due to the lack of clarity in terms of the rationale for the systematic review, which impacts on the research question/study objective, abstract, introduction, and outcomes that will be examined in the review. I have also raised a query regarding the references as a few are citing book chapters rather than journal articles outlining disorder specific models or treatment manuals.

Answer 1: Dear Reviewer #2, thank you very much for your feedback and your suggestions to improve the quality of our manuscript! We think that our protocol has benefited greatly from your suggestions and we hope that the changes made meet your expectations. Following your recommendations, we have revised our manuscript. The respective changes are addressed below and are highlighted in yellow in our revised manuscript.

Specific points

Abstract – introduction – a bit more information regarding why this review is needed/gaps in the literature would be helpful here.

Answer: Thank you for the comment, we have revised the abstract, see p. 2, lines 30-33

Abstract – page 4 – line 31 – please clarify what you mean by 'investigating the valence of situations in which CB occurs'

Answer: see p. 2 line 35

Abstract – general comment – later in the article it seems you are planning to look at 5 groups of disorders – it would be good to highlight what disorders you are planning to look at in the abstract (introduction or method – at the moment you give examples 'such as' but it is not clear if your review will focus on all these disorders).

Answer: see p. 2 lines 29-30

Introduction – general point – I am not clear why it is relevant whether checking behaviour is included in a DSM-5 diagnostic criteria for different disorders is relevant here? Is it being argued that checking behaviour should be a diagnostic criterion, or is this more an issue regarding theoretical conceptualisations of disorders and their maintenance?

Answer: Thank you very much for your comment. Our aim was to emphasize the centrality of the construct. However, we understand that its meaning can be unclear, so we decided to remove the relevant sections.

Introduction – general point – whilst it is helpful to give an overview of the different disorders that checking behaviours are relevant to, what these different behaviours might entail and how they are relevant to the disorder, the introduction could be strengthened by synthesising some of the key points – as the key points are similar, particularly the sections on eating disorders and body dysmorphia in terms of the types of checking behaviours, and the consistent message throughout regarding the temporary alleviation of anxiety these behaviours result in.

Introduction – general point – citations/references – a number of the references used are book chapters and treatment manuals. In line with earlier comments it might strengthen the introduction to highlight where theory is directly linked to treatment models/approaches

Objectives – page 8 – lines 150-153 – the introduction could be better linked to the objectives – for example, for objective 1, there is limited discussion of emotional states in the introduction, objective 2a and 2b are very broad and it would help to give examples based on what you have discussed in the introduction. This is clearer in the abstract.

Answer: Thank you for your input. We agree with you that the introduction could be strengthened by the most important points, as the model assumptions are quite similar. Therefore, we have revised the introduction accordingly so that a stronger reference to the Objectives should also be established (p. 5, lines 102-122).

Introduction – page 6 – line 78 - please clarify this sentence: 'as controlling the absence of potential sources of danger in one's surroundings (e.g., stoves, windows or doors)'. It is not clear how one controls the absence of danger, or how a window is a source of danger

Answer: see p. 4 lines 81-82

Introduction – page 6 – line 81 – please clarify whether this relates to the DSM-5 criteria for OCD

Answer: The section was deleted due to major revisions

Introduction – page 6 – line 88 – in general this is a good explanation of how safety checking may be unhelpful, however I wonder if 'negative reinforcement' may need a bit more explanation given the broader readership of BMJ Open (who may not have a psychology background)

Answer: Thank you for your comment, we have added an explanation on p. 5, line 116

Introduction – page 7 – lines 102-105 – could this sentence be clarified. Checking behaviours such as body measurement and frequent weighing are not the same as actually controlling one's weight, they equate to monitoring body shape and weight.

Answer: Thank you for the comment. As Reviewer 1 also noted, this is probably a language meaning issue between English and German. We have replaced the term "controlling" with "inspecting" and hope that this has clarified the sentence (p. 4, lines 89-92)

Introduction – page 7 – line 110 – consider rephrasing this sentence - from a cognitive behavioural perspective 'over-evaluation of shape and weight' is the underlying cognitive component of eating disorder psychopathology and constitutes a maladaptive system of selfworth, whereby shape and weight are overly important in how one judges oneself as a person. Body checking can be the result of this over-evaluation (if it's important to you, you are likely to monitor it), rather than it being a component of over-evaluation.

Answer: The section was deleted due to major revisions.

Introduction – page 7 – line 116 – please specify what theories (presumably cognitive behavioural?)

Answer: see p. 5 line 103

Objectives – page 8 – line 140 – could you give some examples of mechanisms of action here? Checking behaviour in itself could be construed as a mechanism, so it would be helpful to understand what might underly this

Objectives – page 8 – line 143 – what are the aforementioned models?

Answer: Should be clearer now due to the former description (p.5 lines 102-122)

Objectives – page 8 – line 144 - can you clarify what ritual prevention is

Answer: see p. 6 lines 131-132

Objectives – page 8 – line 145 – can you clarify what models you mean here

Answer: see p. 6 lines 134-135

Methods – eligibility criteria – general point - perhaps rename this to 'Inclusion and exclusion criteria'

Answer: see p. 6 line 151

Methods – eligibility criteria – general point – this section could be more concise – would a table be useful here?

Answer: Thank you for the comment, we have presented the information in a table as you suggested, see table 1, p. 7 line 153

Methods – eligibility criteria – line 161 – please clarify what you mean by 'there might be the

need to delimit CB from exposure' and explain why you would need to exclude based on this
Answer: see p. 7 line 153

Methods – data synthesis – line 212 – it is highlighted here that there will be 5 groups of studies. Is this based on disorder? It could be clearer throughout the introduction, objectives and method that 5 particular disorders will be focused on in this review.

Answer: Thanks for the comment, this point should be clearer now with the previous changes

VERSION 2 – REVIEW

REVIEWER	D. Catherine Walker Union College, Psychology
REVIEW RETURNED	03-Jan-2022

GENERAL COMMENTS	<p>The authors addressed feedback from the original submission, which in general improved the strength of the manuscript. Determining the actual function of CB in anxiety-related disorders is an important aim and one that has been largely missing from the literature, so this review represents a step toward answering this important question.</p> <p>There are a few minor issues to address: Line 105: Typo/English issue “when people are in order to respond”</p> <p>Lines 137-139: Wording could be improved. Specifically, the introduction of the example with the e.g., is not typically used in this way and may not be grammatically correct.</p> <p>Line 136:</p> <ul style="list-style-type: none">• Do the authors feel that the literature has determined whether CB do immediately reduce negative affect? The line “in addition to reducing negative affect” suggests that the authors have already taken this part of the theory to be supported, but the introduction suggests otherwise. Perhaps omit or change the wording to reduce the suggestion of certainty in how CB operates with respect to immediate affective changes?• “As a function of CB” wording is also somewhat odd/awkward. <p>Lines 146-147: I think the authors need to operationalize “short-term” and “long-term” here.</p> <p>It still feels as though the clinical implications could be stronger/clearer in the introduction to bolster the rationale. I am left wondering, how are CB's addressed currently in CBT interventions, and how does that fit with current theory? How would finding that the current theoretical models don't fit alter treatment? The authors speak to this briefly in lines 131-133 and 136-139, but it could be fleshed out a bit more here.</p>
------------------	---

VERSION 2 – AUTHOR RESPONSE

Reviewer #1

The authors addressed feedback from the original submission, which in general improved the strength of the manuscript. Determining the actual function of CB in anxiety-related disorders is an important aim and one that has been largely missing from the literature, so this review represents a step toward answering this important question.

Answer: Dear Reviewer #1, thank you very much for your feedback! We hope that the changes made meet your expectations. Following your recommendations, we have revised our manuscript. The respective changes are highlighted in yellow in our revised manuscript.

Line 105: Typo/English issue “when people are in order to respond”

Answer: see line 104

Line 136: Do the authors feel that the literature has determined whether CB do immediately reduce negative affect? The line “in addition to reducing negative affect” suggests that the authors have already taken this part of the theory to be supported, but the introduction suggests otherwise. Perhaps omit or change the wording to reduce the suggestion of certainty in how CB operates with respect to immediate affective changes? “As a function of CB” wording is also somewhat odd/awkward.

Answer: see lines 137-138

Lines 137-139: Wording could be improved. Specifically, the introduction of the example with the e.g., is not typically used in this way and may not be grammatically correct.

Answer: see line 139

Lines 146-147: I think the authors need to operationalize “short-term” and “long-term” here.

Answer: see lines 152-153

It still feels as though the clinical implications could be stronger/clearer in the introduction to bolster the rationale. I am left wondering, how are CB's addressed currently in CBT interventions, and how does that fit with current theory? How would finding that the current theoretical models don't fit alter treatment? The authors speak to this briefly in lines 131-133 and 136-139, but it could be fleshed out a bit more here.

Answer: see lines 132-135; 141-145